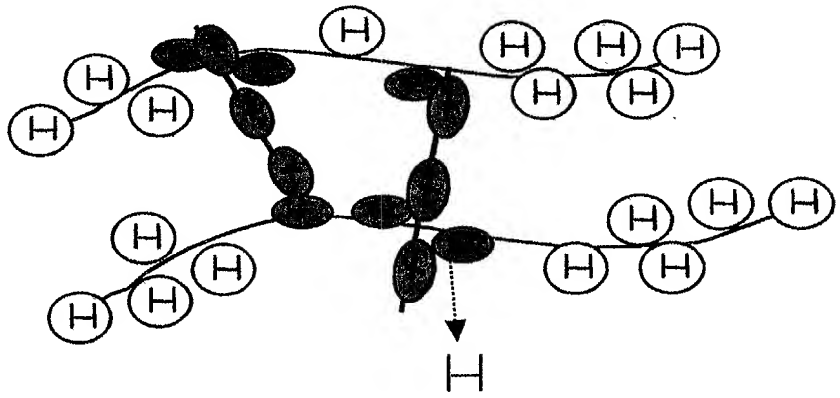
Figure 1.
Interpolyelectrolyte Complex (IPEC)
Dry Strength Enhancement
Polyacrylic acid example



Neutralized anionic COO^- acid groups, .33:1 to protonated acid groups

Functional COOH acid groups, 3:1 to anionic groups

Cationic polymer, matched 1:1 to anionic groups

Proton from acid group, creating neutralized anionic group.

Figure 2.

IPEC plus Cross-linking and Binder

Wet and Dry Strength

Functional groups attach to binder at elevated temperature..

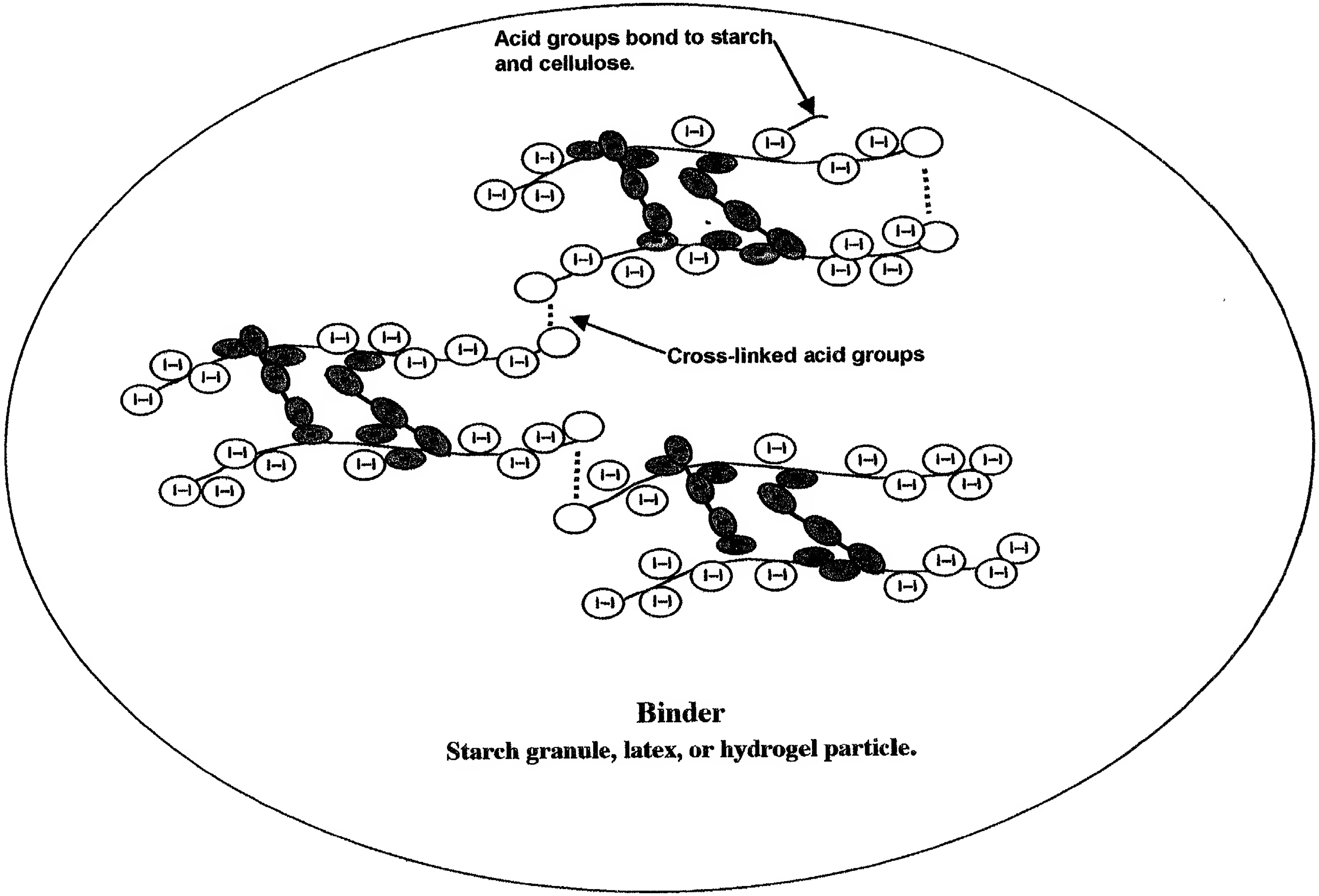


Figure 3.
Polyelectrolyte Surfactant Complexes (PESCs)
Cationic Surfactant with Anionic polymer.
Wet and Dry Strength

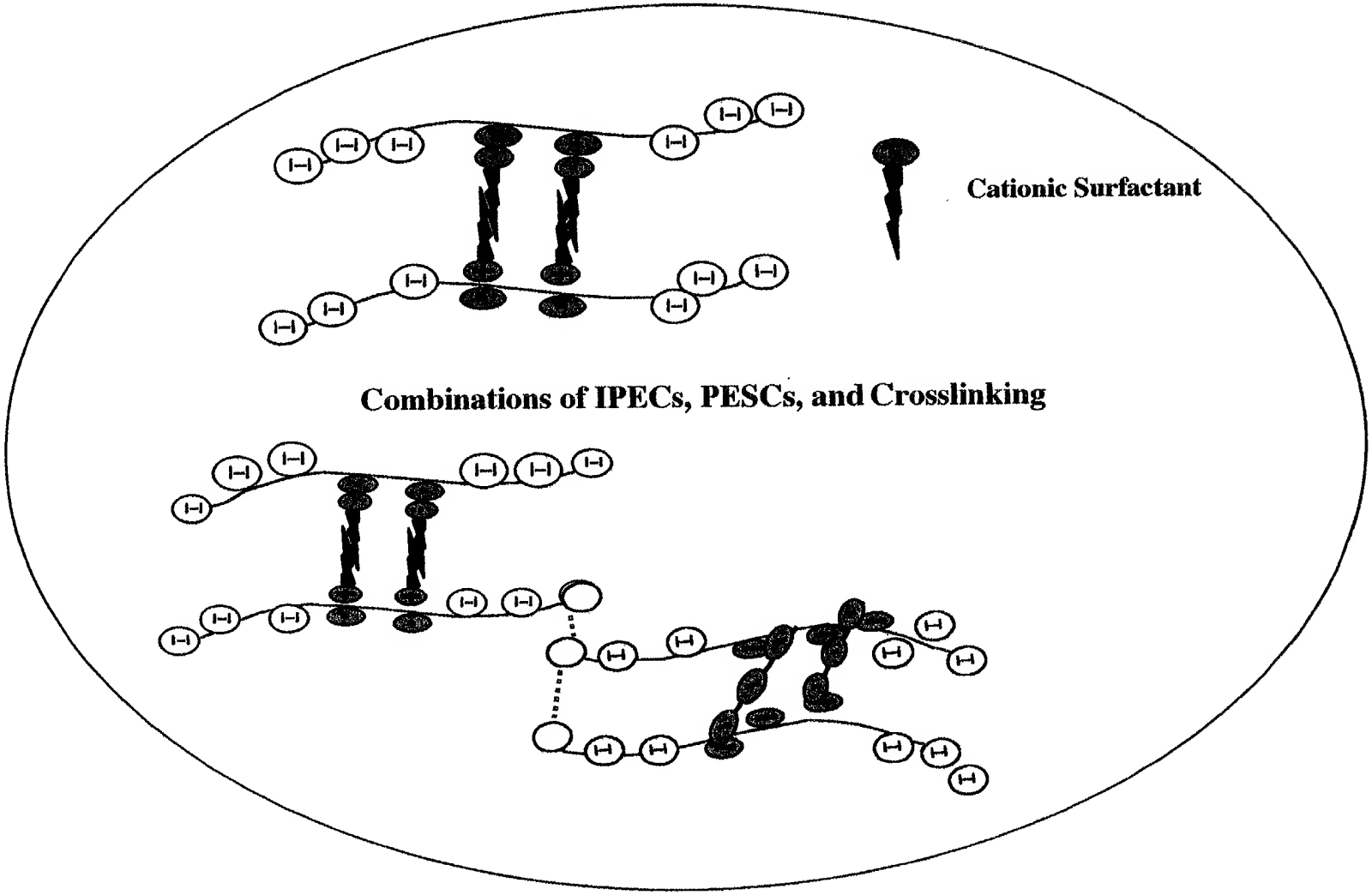


Figure 4

Synergistic Effect of IPEC and Starch on Dry Strength

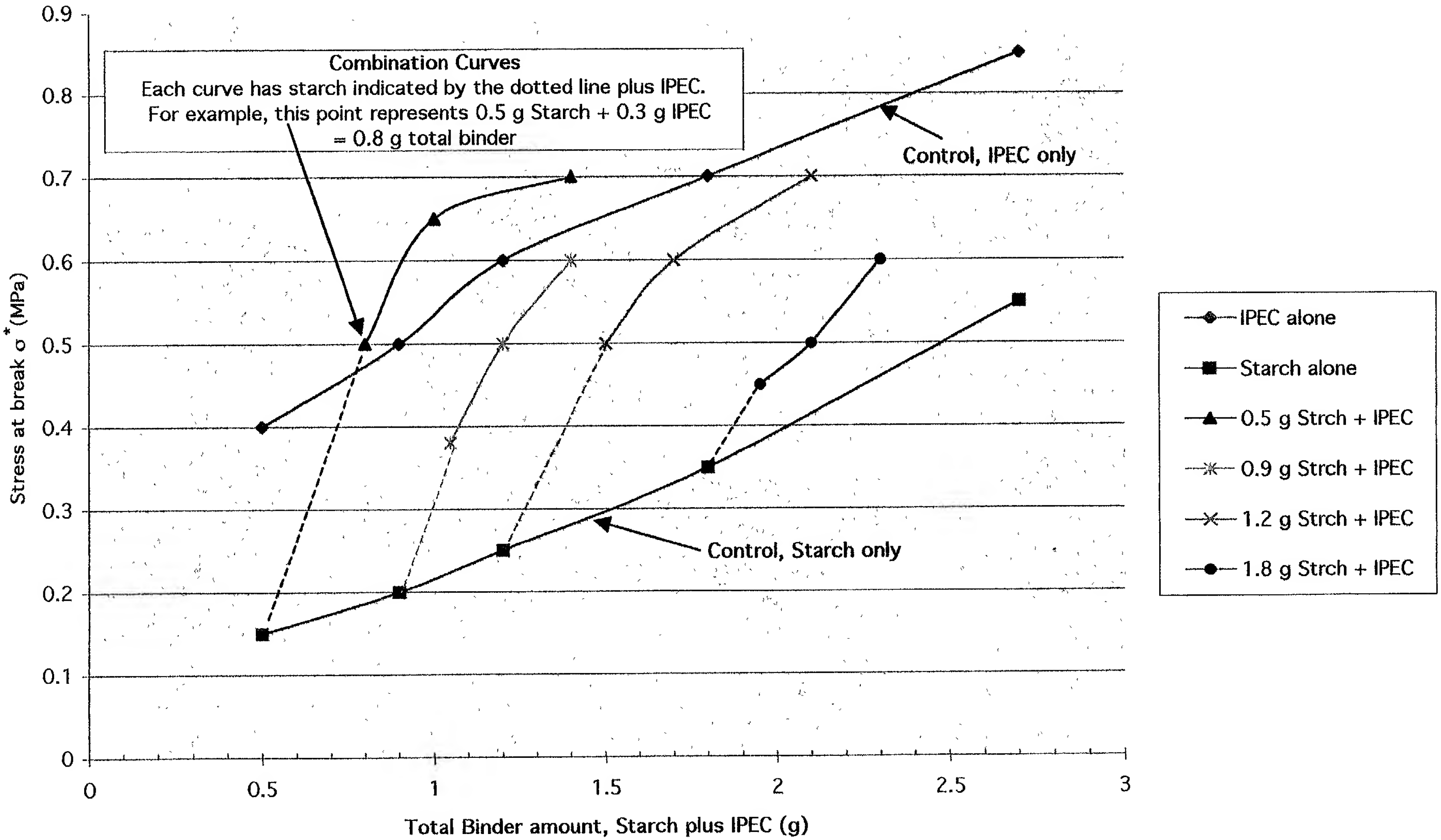


Figure 5
Synergistic Effect of PESC and Starch on Dry Strength

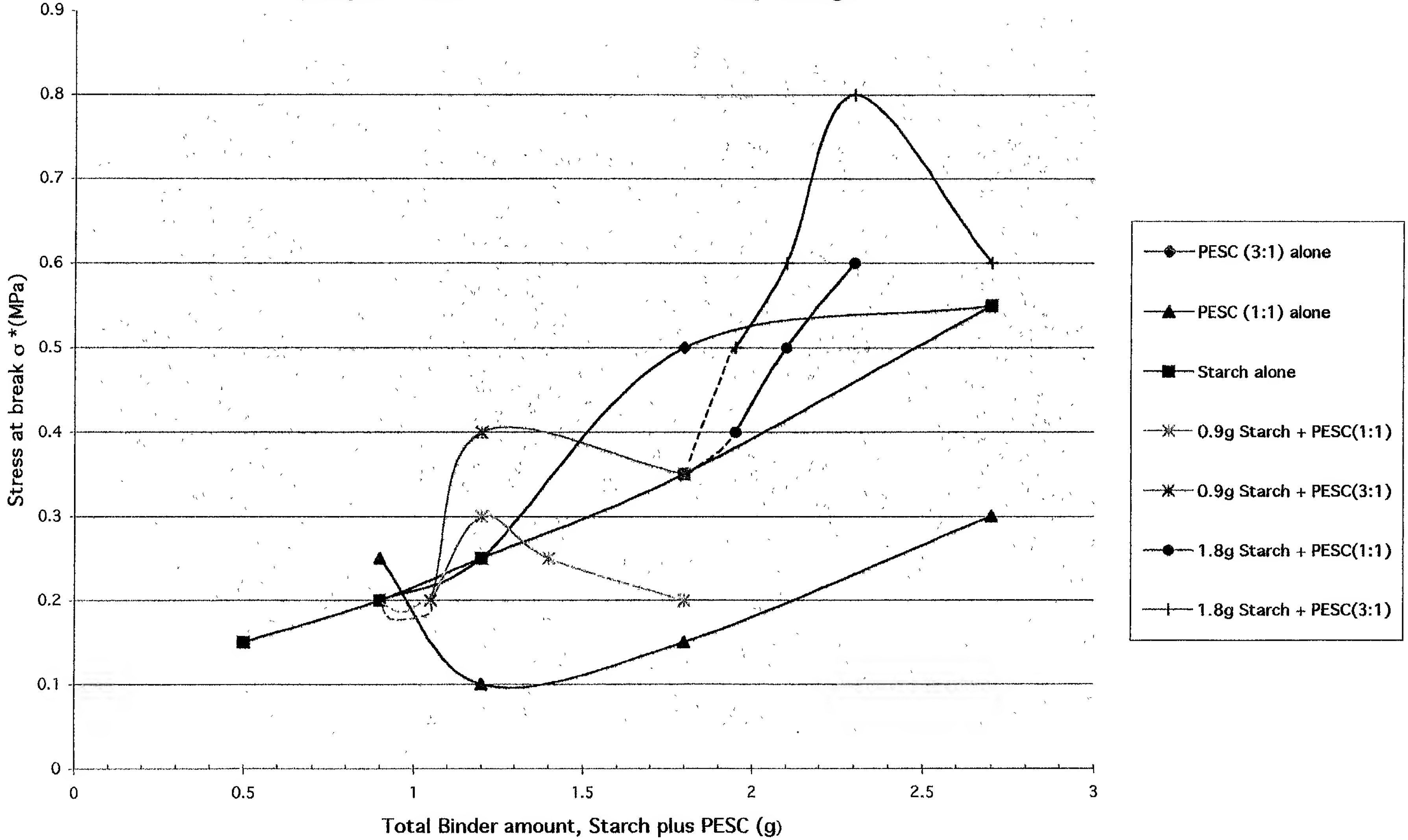


Figure ~~X~~ 6

Synergistic Effect of PESC and Starch on Wet Strength

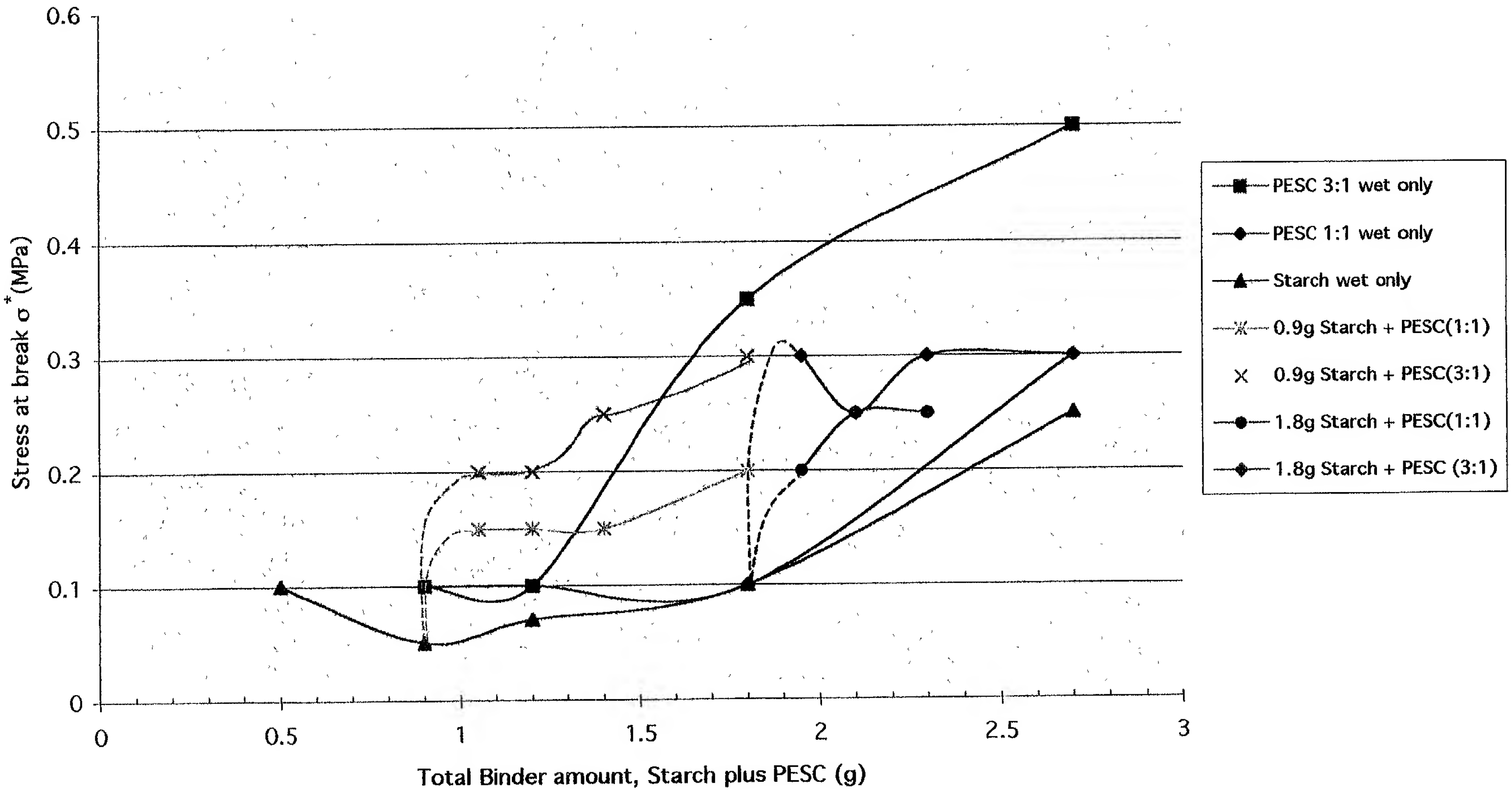


Figure 7

Synergistic Effect of Cross-linked (#)IPEC and Starch on Dry Strength